

Notice of Allowability

Application No.

10/616,998

Examiner

Karie O'Neill

Applicant(s)

KIM, HAE-KYOUNG

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed September 6, 2007.
2. ☒ The allowed claim(s) is/are 1-30.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. The Applicant's amendment filed on September 6, 2007, was received. Claim 30 was amended. Therefore, Claims 1-30 are pending in this office action.

Reasons for Allowance

2. Claims 1-30 are allowed.

3. The following is an examiner's statement of reasons for allowance: the closest prior art, Chen et al. (US 6,410,142 B1), does not teach or fairly suggest in Claim 1, a nanocomposite electrolyte membrane for a fuel cell comprising a polymer having cation exchange groups; and silicate nanoparticles dispersed in the polymer, the silicate nanoparticles having a layered structure, and the silicate nanoparticles being intercalated with the polymer, or layers of the silicate nanoparticles being exfoliated. Chen et al. does not teach or fairly suggest in Claim 26, a nanocomposite electrolyte membrane comprising a polymer having cation exchange groups, silicate nanoparticles dispersed in the polymer and cationic surfactant adsorbed within the silicate nanoparticles, and the method thereof. Chen et al. does not teach or fairly suggest in Claim 30, the polymer having cation exchange groups comprising: a homopolymer derived from monomers having the formula of $\text{MSO}_2\text{CFRfCF}_2\text{O}[\text{CFYCF}_2\text{O}]_n\text{CF}=\text{CF}_2$ and a copolymer derived from the monomers of the formula above and at least one monomer selected from the group consisting of ethylene, halogenated ethylene, perfluorinatedo-olefin, perfluoroalkylvinyl ether, wherein Rf is a radical selected from fluorine and a C1-C10 perfluoroalkyl group; Y is a radical selected from fluorine and a

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trifluoromethyl group; n is an integer from 1 to 3; and M is a radical selected from fluorine, a hydroxyl group, an amino group, and a -OMe where Me is a radical selected from alkaline metal and a quaternary ammonium group; a polymer having the carbon backbone substantially substituted with fluorine and pendant groups having the formula of $-O-[CFR^f]_b[CFR^f]_aSO_3Y$ where a is an integer from 0 to 3; b is an integer from 0 to 3; a+b is greater than or equal to 1; R^f and R'^f are independently selected from halogen atom and a substantially fluorinated alkyl group; and Y is hydrogen or alkaline metal; or a sulfonic fluoropolymer having the fluorinated backbone and pendant groups having the formula of $ZSO_2-[CF_2]_a-[CFR^f]_b-O-$ where Z is halogen, alkaline metal, hydrogen, or -OR where R is a C₁-C₁₀ alkyl or aryl radical; a is an integer from 0 to 2; b is an integer from 0 to 2; a+b is not equal to zero; and R^f is selected from fluorine, chlorine, a C₁-C₁₀ perfluoroalkyl group, and a C₁-C₁₀ fluorochloroalkyl group.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill
Examiner
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PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

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